Amassing and Configuring Human Capital in Nascent Ventures: Dynamic human resource capabilities

Abstract

The capability of nascent ventures to configure resources and ensure viability is a central concern for entrepreneurship research. However, such capability remains largely unexplored (Corner & Wu, 2011; Newey & Zahra, 2009; Zahra, Sapienza, & Davidsson, 2006). We thus apply a dynamic capability perspective to nascent ventures and empirically explore the processes whereby emerging firms amass and configure resources in order to achieve viability. Our research setting is university spin off ventures attempting to commercialize biotechnology. Fundamental for these ventures was the amassing and configuring of human resources, world class scientists who could accomplish the science needed to transform promising compounds into marketable products. We thus propose the concept of dynamic human resource (HR) capabilities to describe capabilities these firms developed in order to achieve venture viability. This concept is consistent with other granular views of dynamic capabilities, such as dynamic marketing capabilities (Bruni & Verona, 2009) and answers the call to investigate how organizations actualize HR as an integral component of strategic capabilities and objectives (Mäkelä, Sumelius, Höglund, & Ahlvik, 2012). From three in-depth, longitudinal case studies, we identify two micro-processes -- gathering/hunting and potentiating -- that show how firms amassed and configured HR for product development and venture viability.

Introduction

The growing literature on dynamic capabilities in entrepreneurship emphasizes the importance of understanding how dynamic capabilities are linked to the entrepreneurial process and new ventures (Zahra et al., 2006). This small but growing research stream holds that dynamic capability development in emerging and small firms is different from that in established incumbent firms (Corner & Wu, 2011). A central concern of this literature thus is how do emerging new ventures configure their resources for viability and sustainable competitive advantage? Understanding how capabilities emerge and are developed in new ventures is a major research challenge (Barreto, 2010; Rasmussen, Mosey, & Wright, 2011; Zahra et al., 2006) and addressing how new firms configure their resources and develop their capabilities have far reaching consequences for their viability (McKelvie & Davidsson, 2009). Thus far, conceptual research has dominated the extant literature (for exceptions see, Boccardelli & Magnusson, 2006; Foss, Iakovleva, Kickul, Oftedal, & Solheim, 2011; McKelvie & Davidsson, 2009; Newey & Zahra, 2009). However, empirical research is needed to ensure further theoretical development does not become remote from the phenomenon being studied (Van Maanen, Sorensen, & Mitchell, 2007) -- how nascent ventures amass and configure resources to develop viable products and achieve financial viability. What little empirical research is available emphasizes the complexity of capability emergence in new emerging firms including the heterogeneity of firm resource utilizations and configurations in developing capabilities (Corner & Wu, 2011; McKelvie & Davidsson, 2009), the importance of capacities for sensing, seizing and transforming changes in market

opportunities and demands (Boccardelli & Magnusson, 2006; Lichtenthaler, 2012), and the importance of temporally specific developmental paths (Newey & Zahra, 2009; Rasmussen et al., 2011). However, questions remain regarding the processes emerging ventures use to amass and configure their resources.

The purpose of this paper is to extend our understanding of how dynamic capabilities emerge and develop in nascent ventures. Our research setting is university spin off ventures attempting to commercialize biotechnology. Fundamental for these ventures was the amassing and configuring of human resources, world class scientists who could accomplish the science needed to transform promising compounds into marketable products. We thus propose the concept of dynamic human resource (HR) capabilities to describe capabilities these firms developed in order to achieve venture viability. We pose the research question of 'How do nascent organizations amass and configure their human resources?' We address this question using a qualitative research design that reflects longitudinal data. This design enables us to identify the micro-processes whereby dynamic HR capabilities are developed for newly formed ventures. Stated differently, we are able to identify the decisions, actions, and behaviors that undergird capabilities emergence and development (Hodgkinson & Healey, 2011; Newey & Zahra, 2009) in fledgling ventures.

Background

Dynamic Capabilities & Established Firms

The dynamic capabilities framework has come to dominate the strategic management literature in recent years because it enables understanding how firms respond to dynamic environments (Drnevich & Kriauciunas, 2011; Pitelis & Teece, 2010) and sustain financial performance (Eisenhardt, Furr, & Bingham, 2010; Helfat & Winter, 2011). Scholars thus are interested in how dynamic capabilities are developed and ingrained into firms (Di Stefano, Peteraf, & Verona, 2010; Salvato, 2009). Studies have examined the role of learning mechanisms and recurring behavioral patterns in acquiring and developing capabilities (Eisenhardt & Martin, 2000; Zollo & Winter, 2002). The empirical literature identified some of these learning mechanisms and patterns including types of learning (Chien & Tsai, 2012; Romme, Zollo, & Berends, 2010); management leadership patterns (Martin, 2011; Pavlou & El Sawy, 2011; Rodenbach & Brettel, 2012); entrepreneurial logics (Newey & Zahra, 2009); and the importance of cognition and mindfulness for learning (Narayanan, Colwell, & Douglas, 2009; Salvato, 2009).

However, these studies have focused on dynamic capability development in established or incumbent firm (Corner & Wu, 2011) so that we remain relatively uninformed about capability development in new, emerging firms (Chen & Hambrick, 1995; Zahra et al., 2006). Conceptual research suggests that dynamic capabilities development would be different in new emerging firms versus established firms (Zahra et al., 2006). Boccardelli and Magnusson's (2006) study highlighted these differences by showing that new ventures used *bricolage* in resource acquisition and deployment which were not described by existing models of dynamic capabilities. Further, they suggest that the dynamic capabilities relevant

to the early stages of new ventures may belong to individuals or small entrepreneurial teams, who have the ability to improvise and re-interpret how resources should be utilized in response to market conditions. Additionally, McKelvie and Davidsson's (2009) study which found mixed support for the relationship between resource endowments and different types of dynamic capabilities in new ventures concluded that *how* resources were utilized were just as important as *what* resources are accessed or possessed. The importance of entrepreneurial agency and resource utilization thus focus attention on the human capital and dynamics (Hitt, Bierman, Shimizu, & Kochhar, 2001) of new ventures. This focus allows a perspective to be built on how dynamic capabilities development may emerge and developed in new ventures.

HR & Dynamic Capabilities

Recent research (Eisenhardt & Graebner, 2007) has shown that individual level human capital and interactions such as the experience of the CEO or top management team can be related to organizational outcomes such as firm performance (Carpenter, Sanders, & Gregersen, 2000; Mäkelä et al., 2012; Reuber & Fischer, 1997) demonstrating the maxim that 'who' can greatly matter (Felin and Foss, 2005, 2009). While discussions linking this aspect of people management to the dynamic capabilities of firms have surfaced recently (Thompson, 2007; Wang, Jaw, & Tsai, 2012), dynamic capability development and the HR processes underlying capability development in firms remain neglected. This is somewhat surprising considering that key theorists (Adner & Helfat, 2003; Teece, 2007) in the field have specified the importance of the human element in developing firm capabilities. While managerial capabilities and agency have come to dominate this aspect of the dynamic capabilities literature (e.g., Lichtenthaler, 2012; Martin, 2011; Pavlou & El Sawy, 2011; Sirmon & Hitt, 2009), questions remain as to how HR becomes intertwined to capabilities development (de Saá-Pérez & García-Falcón, 2002; Huselid & Becker, 2011). However, researchers have yet to explore to role that HR processes play in organization building and strategic capabilities development (Ho, Wilson, & Chen, 2011). Stated differently, the literature is relatively silent on HR and its links to dynamic capabilities. However, we contend there are four important reasons to attend to HR as part of dynamic capabilities development. Firstly, from both knowledge and resource based views, the HR within firms captures critical knowledge and essential properties that can be leveraged to achieve sustainable competitive advantage (Penrose, 1995; Peteraf, 1993; Ployhart & Moliterno, 2011; Teece, 1982). Secondly, the development of dynamic capabilities requires understanding learning mechanisms and social interactions which directs attention to HR of firms (Chien & Tsai, 2012; Regnér, 2008; Romme et al., 2010; Teece, 2012). Thirdly, HR and its management in emerging firms are thought to contribute to the performance and success of the firm (Chadwick & Dabu, 2009; Gruber, MacMillan, & Thompson, 2012; Messersmith & Guthrie, 2010; Wang et al., 2012; Way, 2002). Lastly, the link between HR and dynamic capabilities of firms are far more cogent in dynamic environments (Drnevich & Kriauciunas, 2011; Jantunen, Ellonen, & Johansson, 2012; Shamsie, Martin, & Miller, 2009; Zollo & Winter, 2002) where these capabilities may be of more value (Eisenhardt & Martin, 2000; Teece, 2007; Zahra et al., 2006; Zollo & Winter, 2002). By explicating the development and strategic outcomes of human resources in emergent organizations, the

contribution of these resource and the capabilities that emerge can be understood in the context of strategic action and performance outcomes (Huselid & Becker, 2011).

We thus focus on dynamic HR capabilities and their development in new emerging firms, exploring the research question of 'How do nascent organizations amass and configure their human resources?' Specifically, we implement a longitudinal empirical study examining the development of dynamic human resource capabilities in three multiple case studies of biotechnology ventures. Our evidence paints a picture of nascent biotechnology ventures amassing and configuring of human resources, world class scientists who could accomplish the science needed to transform promising compounds into marketable products. In particular these ventures amassed these HR through a microprocess pattern we label as "gathering and hunting". These ventures then practiced a pattern we call "potentiating" to configure HR so that the science necessary to ensure product development and financial viability could be effectively performed.

Methodology

To address our research question, we utilized an inductive, longitudinal, multiple case study approach (Eisenhardt & Graebner, 2007) to examine dynamic capability development at the level of micro-processes . Such an approach is suitable when scant research informs the topic as is the situation with this research (Yin, 2003), Moreover, this approach enables us to examine how start-ups develop their dynamic HR capabilities as they amass and configure the human capital needed to develop products and achieve venture viability (Singh, Tucker, & House, 1986; Vohora, Wright, & Lockett, 2004).

We adopted a theoretical sampling approach (Eisenhardt, 1989; Glaser & Strauss, 1967) and selected cases of spin-off companies from one university in a metropolitan city in New Zealand. Spinoffs were from a single university (Markman, Siegel, & Wright, 2008) and were aged ten years or less to ensure they were start-ups but also had enough time for systems to develop (Deeds, Decarolis, & Coombs, 2000; Lockett, Siegel, Wright, & Ensley, 2005). Spin-offs were founded by academics to exploit technology they personally developed (Pirney, Surlemont, & Nlemvo, 2003). And lastly, spinoffs were created to exploit specific intellectual property for developing human therapeutics for commercialization (Mustar et al., 2006; Pirnay, Surlemont, & Nlemvo, 2003). In addition, companies were required to meet the minimal criteria of having an identifiable founder/s or founding team still associated with the company (as a key informant). The focus on one country, one university, the biotechnology niche, and human therapeutics, helped reduce variance due to institutional and environmental factors (Yin, 2003). Table 1 presents descriptive characteristics of the three spinoff cases in the study and is available on request from the authors.

Data collection

Data were collected over a period of seven years. These included a 2 year initial, intensive data collection period and then follow up evidence gathering to obtain updated accounts of the cases. Intensive data collection ended when additional evidence collected confirmed

rather than provided new evidence about dynamic HR capabilities. Table 1 reports the data sources.

Primary data. Data collection included face to face, structured interviews. Where possible, formal interviews were conducted with all members of the founding team, board members, members of the top management team including HR Managers (where appointed), at least one senior and one junior staff (see Table 1). Interviews lasted from 45 to 90 minutes and were conducted at regular intervals (12-16 months) throughout a two year initial data collection period. Subsequent follow-up interviews were conducted with the founding team and other available individuals to obtain an updated account of the cases throughout the cases' development (including emails, and phone interviews). Additional primary data was collected by means of observation and recorded in field notes.

Secondary data. Secondary data included documentary data (such as annual reports, scientific reports, confidential business reports, formal documentation, and private memos and reports), multimedia presentations (such as videos and conference seminar presentations) and case archival data (through documentary sources such as company websites, publicly available company reports and media such as newspapers and magazines). These data sources were available for all three cases and contributed to longitudinal data over the seven year period.

Data Analysis

Data analysis involved iterative processes of data reduction, data display and conclusion/verification. The rich qualitative data enabled an in depth picture of the microprocesses underlying dynamic HR capability development. We employed within case analysis in the first instance to develop constructs and begin to identify patterns within each case. We then conduced cross case analysis making us of replication logic to surface patterns that would hold across cases (Yin, 2003).

Results and Implications

Our analysis of the qualitative evidence suggested two micro-level patterns whereby the nascent ventures amassed and configured the HR so essential to creating marketable products and financial viability: gathering and hunting and potentiating. The following sections depict these micro-process patterns in detail, illuminating the 'why' and 'how' of dynamic HR capability development for the biotechnology ventures.

Microprocess pattern 1: Gathering and Hunting

Our findings demonstrated that the ventures initially gathered academics/ scientists who were close at hand including staff already assigned to research institutes within the university and existing PhD students. This gathering process was similar to the process notions of effectuation (Sarasvathy, 2001) and bricolage (Baker & Nelson, 2005) wherein entrepreneurs amass resources of convenience or those close to hand when starting up ventures. More staff were needed, however, and the process of hunting for additional staff began. The ventures initially tried to implement a star model (Burton, 1995) which involved recruiting top talent

globally, using professional recruiting agencies, and paying top salaries. The star model was diverged from substantively over time because the ventures could not afford the salaries top talent could demand and top talent was reluctant to relocate to New Zealand. Ultimately, the ventures used creative solutions to hunt for top talent including hosting academics on sabbatical, providing post-doctoral positions, inviting visiting scholars for a period of time and so forth. These solutions were facilitated by the networks of the new venture teams and key stakeholders such as the university's technology commercialization personnel and venture capitalists. Table 2 highlights the gathering/hunting micro-processes and mechanisms with examples from cases and is available from the authors on request.

Microprocess 2: Potentiating

Our second micro-process, potentiating, had three mechanisms identified as critical to making HR effective and powerful within the ventures. Once HR were amassed, it was important that they be configured in a manner that enabled commercialization of the promising biotechnological compounds the ventures possessed. The first mechanism was configuring and organizing tasks and people. The mechanism thus included configuration of departments and teams that enabled further development of promising compounds and drug trialling needed to ensure commercialization. The second was mentoring/coaching which included socializing, knowledge sharing, and skill building. Firms in our sample engaged in mentoring/coaching of PhD students, post-doctoral staff and junior faculty by senior faculty. Also, visiting academics mentored staff regarding drug trialling and other commercial processes. The third mechanism was tracking/controlling or creating feedback loops that would track compounds' progress towards commercial applications and adjust work when progress was not satisfactory. This mechanism involved a greater scope than performance management and includes informal and formal organizational practices such as science reviews and planning. Table 2 shows the micro-processes for potentiating and is available on request from the authors.

Discussion and Implications

The purpose of this research was to identify microprocesses underlying the development of dynamic HR capabilities. In highlighting the micro-processes of gathering/hunting and potentiating, it extends existing research by examining how nascent ventures amass and configure HR. It also extended research on dynamic capabilities by exploring how human capital, in particular, is amassed and configured. Although Barney (1991) identifies human capital as one of the three categories of resources essential to an organization, there is scant research exploring how human capital is amassed or configured for nascent ventures.

Our findings demonstrate the micro-foundations for how dynamic HR capabilities emerge and are configured in nascent ventures. These microprocesses highlight how the development of dynamic HR capabilities, such as gathering and hunting the required HR for the new venture, is linked to the entrepreneurial process through important mechanisms such as effectuation and bricolage (Boccardelli & Magnusson, 2006; Foss et al., 2011). In addition, potentiating HR required attention to configurational issues within the nascent

venture which provides not only attempts to configure HR for viability but also to build further capabilities through feedback loops and learning and knowledge sharing activities (Newey & Zahra, 2009). This highlights how both entrepreneurial mechanisms (Venkataraman & Sarasvathy, 2001) and development mechanisms are integrated into the firm's dynamic HR capabilities (Foss et al., 2011; Hodgkinson & Healey, 2011).

Implications

The development of dynamic capabilities is a complex, evolving and multilevel process that is poorly understood (Rasmussen et al., 2011). Our findings regarding the development of HR capabilities in nascent ventures have two implications for the wider literature. First, findings reveal another possible source of resource heterogeneity of firms, a fundamental tenet of the resource based view of the firm (Alvarez & Busenitz, 2001; Peteraf & Bergen, 2003). In particular, our findings show how the patterns established for amassing and configuring HR are different for firms despite their location in the same university, city, and biotechnological niche. The patterns thus suggest that new ventures develop unique and idiosyncratic features which shape ventures' future resource endowments (Barreto, 2010). Our findings show how new venture formation has a role to play in creating the idiosyncratic resource endowments that ultimately lead to varying firm performance (Grant, 1997; Zahra & Nielsen, 2002). It is important to note that such idiosyncrasies may lead, in the long run, to performance decrements due to rigidities in patterns as well as superior performance (Leonard-Barton, 1992).

Our second implication concerns the understanding of how human capital becomes a strategically valuable resource and strategically used resource in new ventures (Ployhart & Moliterno, 2011). Our findings show how HR resources are created and configured as an important dynamic capability. This study goes beyond single level human capital research that focuses on the founder and founding team in new ventures and moves towards explanations for how the human capital at different levels could contribute to viability and value. Thus, our findings note that the human capital of the founders sets the starting point of resource endowment for new ventures yet remain inadequate throughout the development of the venture unless efforts are made to co-develop these resources into capabilities that work (Campbell, Coff, & Kryscynski, 2012). Thus a focus on the human capital of the firm requires attention to all levels and processes of HR that create value. In addition, this attention to human capital reveal that it is not just the human capital base of the firm that matters, rather, it is the ways in which HR is utilized and configured that does (Barney, 1991). The microprocesses unveiled in this study highlight the importance of how founding teams are able to customize practices and processes to capture the types of human capital important to their ventures. This novel source of value creation from human capital may be the source of generated competitive advantage that develops from firm specific idiosyncrasies (Felin, Zenger, & Tomsik, 2009; Zenger, 1992).

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